GHRELIN RESPONSES TO ACUTE SUBMAXIMAL EXERCISE IN MALE ROWERS

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The regulatory effect of ghrelin on growth hormone (GH) is limited in describing ghrelin response to acute submaximal exercise intensities in elite athletes. Acute submaximal and maximal physical exercise is known to induce various changes in the hormones of the hypothalamic-pituitary-adrenocortical system. No studies have yet investigated the effect of an acute short-term exercise on plasma ghrelin using an exercise protocol when all major muscle groups of the body are involved as the results may be different because of increased energy output for the same relative work intensity. We investigated the effects of a single sculling exercise performed above and below the individual anaerobic threshold (IAT) on total ghrelin concentration in highly trained male rowers. Nine elite male rowers (20.1±3.7 yrs; 190.0±5.2 cm; 89.6±4.6 kg; %body fat: 9.9±2.5%) volunteered for this study. Single sculling was performed below and above IAT using a mean of 5 bpm above and below the heart rate of the IAT during graded exercise test. Ghrelin, leptin, GH, insulin, and glucose were measured before, immediately after, and after 30 min of recovery. Plasma ghrelin concentration did not increase significantly in either exercise but was approaching significance after 30 min of recovery (P=0.051) when the constant load sculling was performed above the IAT. There were no changes in plasma leptin levels. GH increased significantly immediately after the exercise and remained elevated during the 30 min of recovery in both exercise conditions, while insulin decreased significantly immediately after the exercise and remained significantly lower after the 30 min of recovery in both exercise intensities. Baseline ghrelin was not correlated with the body composition, physical performance, or blood biochemical data. There was no significant relationship between plasma ghrelin and other blood variables immediately after and after the 30 min of recovery in both exercise tests and changes in ghrelin were not related to blood biochemical variables after the exercise tests. In conclusion, the acute constant load sculling exercise above or below IAT that increased GH concentrations did not significantly increase the circulating plasma ghrelin levels.

Keywords: Anaerobic Threshold, Endocrinology, Rowing